



SEQUENCE LISTING

<110> DIVERGEN CORPORATION
ROBERTSON, Dan
SANYAL, Indrajit
ADHIKARI, Robert

<120> CATALASES

<130> DIVER1100-4

<140> US 09/884,889

<141> 2001-06-19

<150> US 09/412,347

<151> 1999-10-05

<150> US 08/951,844

<151> 1997-10-16

<150> US 08/674,887

<151> 1996-07-03

<160> 8

<170> PatentIn version 3.0

<210> 1

<211> 52

<212> DNA

<213> Artificial sequence

<220>

<223> Primer for PCR

<400> 1

ccgagaattc attaaagagg agaaattaac tatgaataac gcatccgctg ac

52

<210> 2

<211> 31

<212> DNA

<213> Artificial sequence

<220>

<223> Primer for PCR

<400> 2

gcaaagctgc agcgagcat tttcgaaagg c

31

<210> 3

<211> 52

<212> DNA

<213> Artificial sequence

<220>

<223> Primer for PCR

<400> 3

ccgagaattc attaaagagg agaaattaac tatggaaaat cacaaacact ca

52

T00400-0001

<210> 4
 <211> 31
 <212> DNA
 <213> Artificial sequence

<220>
 <223> Primer for PCR

<400> 4
 ctggccaaac tagactttat tccatggaag c 31

<210> 5
 <211> 2262
 <212> DNA
 <213> *Alcaligenes (Deleya) aquamarinus*

<400> 5
 atgaataacg catccgctga cgatctacac agtagcttgc agcaaagatg cagagcattt 60
 gttcccttgg tatcgccaag gcatagagca ataagggaga gagctatgag cggtaaatgt 120
 cctgtcatgc acggtggtaa cacctcgacc ggtacttcca acaaagattg gtggccggaa 180
 gggttgaacc tggatatttt gcatcagcaa gatcgcaaat cagacccgat ggatccggat 240
 ttcaactacc gtgaagaagt acgcaagctc gatttcgacg cgctgaagaa agatgtccac 300
 gcgttgatga ccgatagcca agagtgggtg cccgctgact gggggcacta cggcggtttg 360
 atgatccgta tggcttggca ctccgctggc acctaccgta ttgctgatgg ccgtgggggc 420
 ggtggtaccg gaagccagcg ctttgcaccg ctcaactcct ggccggacaa cgtcagcctg 480
 gataaagcgc gccgtctgct gtggccgatc aagaagaagt acggcaacaa aatcagctgg 540
 gcagacctga tgattctggc tggcaccgtg gcttatgagt ccatgggctt acctgcttac 600
 ggcttctctt tgggccgctg cgatatattg gaacccgaaa aagatatcta ctgggggtgac 660
 gaaaaagagt ggctggcacc ttctgacgaa cgctacggcg acgtgaacaa gccagagacc 720
 atggaaaacc cgctggcggc tgtccaaatg ggtctgatct atgtgaaccc ggaagggtgt 780
 aacggccacc ctgatccgct gagaaccgca cagcaggtag ttgaaacctt cgcccgtatg 840
 gcgatgaacg acgaaaaaac cgagccctc acagctggcg gccacaccgt cggtaattgt 900
 cacggtaatg gcaatgcctc tgcgttagcc cctgacccaa aagcctctga cgttgaaaac 960
 cagggcttag gttggggcaa cccaacatg cagggcaagg caagcaacgc cgtgacctcg 1020
 ggtatcgaag gtgcttggac caccaacccc acgaaattcg atatgggcta tttcgacctg 1080
 ctgttcggct acaattggga actgaaaaag agtcctgccg gtgcccacca ttgggaaccg 1140
 attgacatca aaaaggaaaa caagccggtt gacgccagcg acccctctat tcgccacaac 1200
 ccgatcatga ccgatgcgga tatggcgata aaggtaaata cgacctatcg cgctatctgc 1260

gaaaaattca tggccgatcc tgagtacttc aagaaaactt tcgcgaaggc gtggttcaag 1320
 ctgacgcacc gtgacctggg cccgaaatca cgttacatcg gcccggaagt gccggcagaa 1380
 gacctgattt ggcaagaccc gattccggca ggtaacaccg actactgcga agaagtggtc 1440
 aagcagaaaa ttgcacaaag tggcctgagc attagtgaga tggctctccac cgcttgggac 1500
 agtggccgta cttatcgcgg ttccgatatg cgcggcggtg ctaacggtgc ccgcattcgc 1560
 ttggccccac agaacgagtg gcagggcaac gagccggagc gcctggcgaa agtgctgagc 1620
 gtctacgagc agatctctgc cgacaccggc gctagcatcg cggacgtgat cgttctggcc 1680
 ggtagcgtag gcacgcagaa agccgcgaaa gcagcagggtt acgatgtgcg cgttcccttc 1740
 ctgaaaggcc gtggcgatgc gaccgcccag atgaccgacg cagactcctt cgcaccgctg 1800
 gagccgctgg ccgatggctt ccgcaactgg cagaagaaag agtatgtggt gaagccggaa 1860
 gagatgctgc tggatcgtgc gcagctgatg ggcttaaccg gcccggaat gaccgtgctg 1920
 ctgggcggtg tgccgctact gggcaccaac tatggtggca ccaaacacgg cgtattcacc 1980
 gattgtgaag gccagttgac caacgacttt tttgtgaacc tgaccgatat ggggaacagc 2040
 tggaagccgg taggtagcaa cgctacgaa atccgcgacc gcaagaccgg tgccgtgaag 2100
 tggaccgcct cgcgggtgga tctggtatct gggtccaact cgctactgcg ctcttacgca 2160
 gaagtgtacg cccaggacga taacggcgag aagttcgtca gagacttcgt cgccgcctgg 2220
 accaaagtga tgaacgccga ccgtttcgac gtcgcgtcgt aa 2262

<210> 6
 <211> 753
 <212> PRT
 <213> *Alcaligenes (Deleya) aquamarinus*

<400> 6

Met Asn Asn Ala Ser Ala Asp Asp Leu His Ser Ser Leu Gln Gln Arg
1 5 10 15

Cys Arg Ala Phe Val Pro Leu Val Ser Pro Arg His Arg Ala Ile Arg
20 25 30

Glu Arg Ala Met Ser Gly Lys Cys Pro Val Met His Gly Gly Asn Thr
35 40 45

Ser Thr Gly Thr Ser Asn Lys Asp Trp Trp Pro Glu Gly Leu Asn Leu
50 55 60

Asp Ile Leu His Gln Gln Asp Arg Lys Ser Asp Pro Met Asp Pro Asp
65 70 75 80

Phe Asn Tyr Arg Glu Glu Val Arg Lys Leu Asp Phe Asp Ala Leu Lys
85 90 95

Lys Asp Val His Ala Leu Met Thr Asp Ser Gln Glu Trp Trp Pro Ala

100					105					110					
Asp	Trp	Gly	His	Tyr	Gly	Gly	Leu	Met	Ile	Arg	Met	Ala	Trp	His	Ser
		115					120					125			
Ala	Gly	Thr	Tyr	Arg	Ile	Ala	Asp	Gly	Arg	Gly	Gly	Gly	Gly	Thr	Gly
		130					135					140			
Ser	Gln	Arg	Phe	Ala	Pro	Leu	Asn	Ser	Trp	Pro	Asp	Asn	Val	Ser	Leu
							150					155			160
Asp	Lys	Ala	Arg	Arg	Leu	Leu	Trp	Pro	Ile	Lys	Lys	Lys	Tyr	Gly	Asn
				165					170					175	
Lys	Ile	Ser	Trp	Ala	Asp	Leu	Met	Ile	Leu	Ala	Gly	Thr	Val	Ala	Tyr
				180					185					190	
Glu	Ser	Met	Gly	Leu	Pro	Ala	Tyr	Gly	Phe	Ser	Phe	Gly	Arg	Val	Asp
				195					200					205	
Ile	Trp	Glu	Pro	Glu	Lys	Asp	Ile	Tyr	Trp	Gly	Asp	Glu	Lys	Glu	Trp
				210					215					220	
Leu	Ala	Pro	Ser	Asp	Glu	Arg	Tyr	Gly	Asp	Val	Asn	Lys	Pro	Glu	Thr
				225					230					235	240
Met	Glu	Asn	Pro	Leu	Ala	Ala	Val	Gln	Met	Gly	Leu	Ile	Tyr	Val	Asn
				245					250					255	
Pro	Glu	Gly	Val	Asn	Gly	His	Pro	Asp	Pro	Leu	Arg	Thr	Ala	Gln	Gln
				260					265					270	
Val	Leu	Glu	Thr	Phe	Ala	Arg	Met	Ala	Met	Asn	Asp	Glu	Lys	Thr	Ala
				275					280					285	
Ala	Leu	Thr	Ala	Gly	Gly	His	Thr	Val	Gly	Asn	Cys	His	Gly	Asn	Gly
				290					295					300	
Asn	Ala	Ser	Ala	Leu	Ala	Pro	Asp	Pro	Lys	Ala	Ser	Asp	Val	Glu	Asn
				305					310					315	320
Gln	Gly	Leu	Gly	Trp	Gly	Asn	Pro	Asn	Met	Gln	Gly	Lys	Ala	Ser	Asn
				325					330					335	
Ala	Val	Thr	Ser	Gly	Ile	Glu	Gly	Ala	Trp	Thr	Thr	Asn	Pro	Thr	Lys
				340					345					350	
Phe	Asp	Met	Gly	Tyr	Phe	Asp	Leu	Leu	Phe	Gly	Tyr	Asn	Trp	Glu	Leu
				355					360					365	
Lys	Lys	Ser	Pro	Ala	Gly	Ala	His	His	Trp	Glu	Pro	Ile	Asp	Ile	Lys
				370					375					380	
Lys	Glu	Asn	Lys	Pro	Val	Asp	Ala	Ser	Asp	Pro	Ser	Ile	Arg	His	Asn
				385					390					395	400
Pro	Ile	Met	Thr	Asp	Ala	Asp	Met	Ala	Ile	Lys	Val	Asn	Pro	Thr	Tyr
				405					410					415	
Arg	Ala	Ile	Cys	Glu	Lys	Phe	Met	Ala	Asp	Pro	Glu	Tyr	Phe	Lys	Lys
				420					425					430	

100 105 110 115 120 125 130 135 140 145 150 155 160 165 170 175 180 185 190 195 200 205 210 215 220 225 230 235 240 245 250 255 260 265 270 275 280 285 290 295 300 305 310 315 320 325 330 335 340 345 350 355 360 365 370 375 380 385 390 395 400 405 410 415 420 425 430

Ser

<210> 7
 <211> 2238
 <212> DNA
 <213> *Microscilla furvescens*

<400> 7
 atggaaaatc acaaacactc aggatcttct acgtataaca caaacactgg cggaaaatgc 60
 ccttttaccg gaggttcgct taagcaaagt gcaggtggcg gcaccaaaaa cagggattgg 120
 tggcccaaca tgctcaacct cgcatctta cgccaacatt catcgctatc ggacccaaac 180
 gaccgggatt ttgactatgc cgaagagttt aagaagctag atctggcagc ggttaaaaag 240
 gacctggcag cgctaatac agattcacag gactgggtggc cagcagatta cggtcattat 300
 ggccccttct ttatacgcat ggcgtggcac agcgccggca cctaccgtat cggatgatggc 360
 cgtgggtggcg gtgggtccgg ctacacagcg ttcgcgcctc tcaatagctg gccagacaat 420
 gccaatctgg ataaagcacg cttgcttctt tggcccatca aaaaaaata cggtcgaaaa 480
 atctcctggg cggatctaata gatactcaca ggaaacgtag ctctggaaac tatgggcttt 540
 aaaacttttg gttttgcagg tggcagagca gatgtatggg agcctgaaga agatgtatac 600
 tggggagcag aaaccgaatg gctgggagac aagcgctatg aaggtgaccg agagctcgaa 660
 aatcccctgg gagccgtaca aatgggactc atctatgtaa acccgaagg acccaacggc 720
 aagccagacc ctatcgctgc tgcgcgtgat attcgtgaga cttttggccg aatggcaatg 780
 aatgacgaag aaaccgtggc tctcatagcg ggtggacaca ctttcgaaa aaccatggt 840
 gctgccgatg cggagaaata tgtgggccga gagcctgccg ccgcaggat tgaagaaatg 900
 agcctgggggt ggaaaaacac ctacggcacc ggacacgggtg cggataccat caccagtgga 960
 ctagaaggcg cctggacca gacccctact caatggagca ataacttttt tgaaaacctc 1020
 tttggttacg agtgggagct taccaaaagt ccagctggag cttatcagtg gaaacaaaa 1080
 gacggtgccg gggctggcac cataccggat gcacatgatc ccagcaagtc gcacgctcca 1140
 tttatgctca ctacggacct ggcgtgcgc atggaccctg attacgaaaa aatttctcga 1200
 cggctactatg aaaaccctga tgagtttgca gatgctttcg cgaaagcatg gtacaaactg 1260
 acacacagag atatgggacc aaaggtgcgc tacctgggac cagaagtgcc tcaggaagac 1320
 ctcatctggc aagaccctat accagatgta agccatcctc ttgtagacga aaacgatatt 1380
 gaaggcctaa aagccaaaat cctggaatcg ggactgacgg taagcgagct ggtaagcacg 1440
 gcatgggctt ctgcatctac ttttagaaac tctgacaagc gcggcggtgc caacgggtgca 1500
 cgtatacgac tggccccaca aaaagactgg gaagtaaaca accctcagca acttgccagg 1560

5'-GGTGGG-3'

```
<210>      8
<211>     745
<212>     PRT
<213>     Microscilla furvescens
```

Met Glu Asn His Lys His Ser Gly Ser Ser Thr Tyr Asn Thr Asn Thr
1 5 10 15

Gly Gly Lys Cys Pro Phe Thr Gly Gly Ser Leu Lys Gln Ser Ala Gly
20 25 30

Gly Gly Thr Lys Asn Arg Asp Trp Trp Pro Asn Met Leu Asn Leu Gly
35 40 45

Ile Leu Arg Gln His Ser Ser Leu Ser Asp Pro Asn Asp Pro Asp Phe
50 55 60

Asp Tyr Ala Glu Glu Phe Lys Lys Leu Asp Leu Ala Ala Val Lys Lys
65 70 75 80

Asp Leu Ala Ala Leu Met Thr Asp Ser Gln Asp Trp Trp Pro Ala Asp
85 90 95

Tyr Gly His Tyr Gly Pro Phe Phe Ile Arg Met Ala Trp His Ser Ala
100 105 110

Gly Thr Tyr Arg Ile Gly Asp Gly Arg Gly Gly Gly Gly Ser Gly Ser
115 120 125

Gln Arg Phe Ala Pro Leu Asn Ser Trp Pro Asp Asn Ala Asn Leu Asp
130 135 140

Lys Ala Arg Leu Leu Leu Trp Pro Ile Lys Gln Lys Tyr Gly Arg Lys
145 150 155 160

Ile	Ser	Trp	Ala	Asp 165	Leu	Met	Ile	Leu	Thr	Gly	Asn	Val	Ala	Leu	Glu
Thr	Met	Gly	Phe 180	Lys	Thr	Phe	Gly	Phe	Ala	Gly	Gly	Arg	Ala	Asp	Val
Trp	Glu	Pro	Glu	Glu	Asp	Val	Tyr	Trp	Gly	Ala	Glu	Thr	Glu	Trp	Leu
Gly	Asp 210	Lys	Arg	Tyr	Glu	Gly	Asp	Arg	Glu	Leu	Glu	Asn	Pro	Leu	Gly
Ala 225	Val	Gln	Met	Gly	Leu	Ile	Tyr	Val	Asn	Pro	Glu	Gly	Pro	Asn	Gly
Lys	Pro	Asp	Pro	Ile 245	Ala	Ala	Ala	Arg	Asp 250	Ile	Arg	Glu	Thr	Phe	Gly
Arg	Met	Ala	Met 260	Asn	Asp	Glu	Glu	Thr	Val	Ala	Leu	Ile	Ala	Gly	Gly
His	Thr	Phe 275	Gly	Lys	Thr	His	Gly 280	Ala	Ala	Asp	Ala	Glu	Lys	Tyr	Val
Gly	Arg 290	Glu	Pro	Ala	Ala	Ala	Gly 295	Ile	Glu	Glu	Met	Ser	Leu	Gly	Trp
Lys 305	Asn	Thr	Tyr	Gly	Thr	Gly	His	Gly	Ala	Asp 315	Thr	Ile	Thr	Ser	Gly
Leu	Glu	Gly	Ala	Trp 325	Thr	Lys	Thr	Pro	Thr 330	Gln	Trp	Ser	Asn	Asn	Phe
Phe	Glu	Asn	Leu 340	Phe	Gly	Tyr	Glu	Trp 345	Glu	Leu	Thr	Lys	Ser	Pro	Ala
Gly	Ala	Tyr 355	Gln	Trp	Lys	Pro	Lys 360	Asp	Gly	Ala	Gly	Ala	Gly	Thr	Ile
Pro	Asp 370	Ala	His	Asp	Pro	Ser	Lys 375	Ser	His	Ala	Pro	Phe	Met	Leu	Thr
Thr 385	Asp	Leu	Ala	Leu	Arg 390	Met	Asp	Pro	Asp	Tyr 395	Glu	Lys	Ile	Ser	Arg
Arg	Tyr	Tyr	Glu	Asn 405	Pro	Asp	Glu	Phe	Ala 410	Asp	Ala	Phe	Ala	Lys	Ala
Trp	Tyr	Lys	Leu 420	Thr	His	Arg	Asp 425	Met	Gly	Pro	Lys	Val	Arg	Tyr	Leu
Gly	Pro	Glu 435	Val	Pro	Gln	Glu	Asp 440	Leu	Ile	Trp	Gln	Asp 445	Pro	Ile	Pro
Asp	Val 450	Ser	His	Pro	Leu	Val	Asp 455	Glu	Asn	Asp	Ile	Glu	Gly	Leu	Lys
Ala 465	Lys	Ile	Leu	Glu	Ser 470	Gly	Leu	Thr	Val	Ser 475	Glu	Leu	Val	Ser	Thr

Ala	Trp	Ala	Ser	Ala	Ser	Thr	Phe	Arg	Asn	Ser	Asp	Lys	Arg	Gly	Gly	
				485					490					495		
Ala	Asn	Gly	Ala	Arg	Ile	Arg	Leu	Ala	Pro	Gln	Lys	Asp	Trp	Glu	Val	
				500					505					510		
Asn	Asn	Pro	Gln	Gln	Leu	Ala	Arg	Val	Leu	Lys	Thr	Leu	Glu	Gly	Ile	
				515					520					525		
Gln	Glu	Asp	Phe	Asn	Gln	Ala	Gln	Ser	Asp	Asn	Lys	Ala	Val	Ser	Leu	
				530					535					540		
Ala	Asp	Leu	Ile	Val	Leu	Ala	Gly	Cys	Ala	Gly	Val	Glu	Lys	Ala	Ala	
				545					550					555		
Lys	Asp	Ala	Gly	His	Glu	Val	Gln	Val	Pro	Phe	Asn	Pro	Gly	Arg	Ala	
				565					570					575		
Asp	Ala	Thr	Ala	Glu	Gln	Thr	Asp	Val	Glu	Ala	Phe	Glu	Ala	Leu	Glu	
				580					585					590		
Pro	Ala	Ala	Asp	Gly	Phe	Arg	Asn	Tyr	Ile	Lys	Pro	Glu	His	Lys	Val	
				595					600					605		
Ser	Ala	Glu	Glu	Met	Leu	Val	Asp	Arg	Ala	Gln	Leu	Leu	Ser	Leu	Ser	
				610					615					620		
Ala	Pro	Glu	Met	Thr	Ala	Leu	Val	Gly	Gly	Met	Arg	Val	Leu	Gly	Thr	
				625					630					635		
Asn	Tyr	Asp	Gly	Ser	Gln	His	Gly	Val	Phe	Thr	Asn	Lys	Pro	Gly	Gln	
				645					650					655		
Leu	Ser	Asn	Asp	Phe	Phe	Val	Asn	Leu	Leu	Asp	Leu	Asn	Thr	Lys	Trp	
				660					665					670		
Arg	Ala	Ser	Asp	Glu	Ser	Asp	Lys	Val	Phe	Glu	Gly	Arg	Asp	Phe	Lys	
				675					680					685		
Thr	Gly	Glu	Val	Lys	Trp	Ser	Gly	Thr	Arg	Val	Asp	Leu	Ile	Phe	Gly	
				690					695					700		
Ser	Asn	Ser	Glu	Leu	Arg	Ala	Leu	Ala	Glu	Val	Tyr	Gly	Cys	Ala	Asp	
				705					710					715		
Ser	Glu	Glu	Lys	Phe	Val	Lys	Asp	Phe	Val	Lys	Ala	Trp	Ala	Lys	Val	
				725					730					735		
Met	Asp	Leu	Asp	Arg	Phe	Asp	Leu	Lys								
				740					745							